20020602.ba v03_n341.bam.20020602

>From ???@??? Sun Jun 2 00:12:03 2002 -0500
Message-Id: <200206020510.g525ASx6025222@sco.theporch.com>
Date: Sun, 2 Jun 2002 00:10:00 CDT
From: Old Tube Radios <boatanchors@theporch.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: BOATANCHORS digest 3341

BOATANCHORS Digest 3341

Topics covered in this issue include:

1) Collins knobs wanted
   by "Tom Smith" <tsmith@hal-pc.org>
2) Re: How do you id PCB's? What to do?
   by Arden Allen <gumbear@pacbell.net>
3) Re: Wanted: 6BQ5's
   by Arden Allen <gumbear@pacbell.net>
4) Re: How do you id PCB's? What to do?
   by "Ed Sharpe" <esharpe@uswest.net>
5) Status of projects
   by "David L. Thompson" <thompson@mindspring.com>
6) SR-2000 Hallicrafters Hurricane hint
   by Edward J Knobloch <k4pf@juno.com>
7) Re: How do you id PCB's? What to do? [Long]
   by "Barry L. Ornitz" <ornitz@tricon.net>
8) Roger's death
   by "Roger A. McCarty" <rmccarty@earthlink.net>
9) Re: How do you id PCB's? What to do?
   by Arden Allen <gumbear@pacbell.net>
10) Re: How do you id PCB's? What to do?
   by "Barry L. Ornitz" <ornitz@tricon.net>
11) Re: How do you id PCB's? What to do?
   by "Ed Sharpe" <esharpe@uswest.net>
12) Re: How do you id PCB's? What to do? [Long]
   by "ed sharpe" <esharpe@uswest.net>

Message-ID: <013501c2096f$934ef3c0$a580b4ce@tsmith>
From: "Tom Smith" <tsmith@hal-pc.org>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Collins knobs wanted
Date: Sat, 1 Jun 2002 06:23:52 -0700
MIME-Version: 1.0
Content-Type: multipart/alternative;
    boundary="----=_NextPart_000_0132_01C20934.E65BCB00"

This is a multi-part message in MIME format.

------=_NextPart_000_0132_01C20934.E65BCB00
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: quoted-printable

Hi Group,
I'm looking for several of the knobs used on some of the Collins =
broadcast gear such as mixers. The knob is made of aluminum and is black =
anodized with a 2 1/4" skirt diameter. A jpeg of the knob can be seen at =
the address listed below. If you have one or more or know where I might =
obtain a few, please email details.

http://www.hal-pc.org/~tsmith/12Z_knob.jpg

Have a great weekend,

Tom N5AMA

------=_NextPart_000_0132_01C20934.E65BCB00
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*         ---REMAINDER OF MESSAGE TRUNCATED---             *
*     This post contains a forbidden message format        *
*  (such as an attached file, a v-card, HTML formatting)  *
*    Mail Lists at theporch.com only accept PLAIN TEXT     *
* If your postings display this message your mail program *
* is not set to send PLAIN TEXT ONLY and needs adjusting  *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
```

------=_NextPart_000_0132_01C20934.E65BCB00--

Date: Sat, 01 Jun 2002 12:09:04 -0700
From: Arden Allen <gumbear@pacbell.net>
Subject: Re: How do you id PCB's? What to do?
To: Old Tube Radios <boatanchors@theporch.com>
Message-id: <0GX100IZ7JUSW8@mta6.snfc21.pbi.net>
MIME-version: 1.0
Content-type: text/plain; charset=ISO-8859-1
Content-transfer-encoding: 7bit

Hi Tom;

> ....Or should I just

> assume that since it is 55 years old, it is bad stuff and paint over it
...
> so as to contain whatever it is.   Or should I attempt to remove the
residue
> and remove the leaking capacitor? Or is there some way to neutralize
this
> residue...?

I don't work for the EPA or am a toxicologist but everything I know about your PCB "invasion" tells me you have nothing to worry about. Just clean the residue out by using a solvent like acetone or for tough stuff paint remover. The cleaned out gunk can be tossed in the regular trash after the solvent has evaporated out of the rags or paper towels you used. Just keep in mind, the solvents you use have far greater risks associated with them, such as their flammability or intoxification from breathing them. Use prudence when working with solvents, plenty of fresh air ventilation, no flames nearby, and wash your hands with soap and water when finished.

Arden Allen   KB6NAX   Vallejo, CA   gumbear@pacbell.net

Date: Sat, 01 Jun 2002 12:14:41 -0700
From: Arden Allen <gumbear@pacbell.net>
Subject: Re: Wanted: 6BQ5's
To: Old Tube Radios <boatanchors@theporch.com>
Message-id: <0GX100ILGK42VZ@mta6.snfc21.pbi.net>
MIME-version: 1.0
Content-type: text/plain; charset=ISO-8859-1
Content-transfer-encoding: 7bit

Russ;

> Please, if you would, give more info on this Lithuanian contact
for
> tubes etc. ....

Point your browser at <http://kwtubes.s5.com> and order away!!

Arden Allen   KB6NAX   Vallejo, CA   gumbear@pacbell.net

Date: Sat, 1 Jun 2002 13:19:55 -0700
Message-ID: <00eb01c209a9$b26e6ee0$5851a3ac@oemcomputer>
From: "Ed Sharpe" <esharpe@uswest.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: How do you id PCB's? What to do?
MIME-Version: 1.0
Content-Type: text/plain;

```
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

the main offender  are oil filled capacitors dykonol pyronol ( spelling)
etc..... I am not sure about standard can type electrolytics.

ed sharpe archivist for smecc
----- Original Message -----
From: "Tarheel6" <Tarheel6@email.msn.com>
To: "Old Tube Radios" <boatanchors@theporch.com>
Sent: Thursday, May 30, 2002 9:23 PM
Subject: How do you id PCB's? What to do?


> Fellow Anchorites...
>     I just puchased an Army RA-42 power supply, which is about 55 years
old,
> and when I removed the cabinet found that sections of the inside of the
> cabinet and chassis were stained from a liquid residue that had leaked out
> of the filter capacitor.  Most of the residue is dried; but some of
sections
> have a layer of stain that has a rubbery consistency.  Also, on some of
the
> surfaces the residue is thick enough (but still very thin) to be peeled
off.
>     Having heard about PCB's on this list ... I immediately wondered if
this
> residue had PCB's in it?  How can I test it for PCB's?  Or should I just
> assume that since it is 55 years old, it is bad stuff and paint over it
....
> so as to contain whatever it is.   Or should I attempt to remove the
residue
> and remove the leaking capacitor?  Or is there some way to neutralize this
> residue...?
>     Any help about what I should do and not do would be greatly
appeciated.
> thanks in advance,
> -tom
>
>
>
>

------------------------------
Message-ID: <001c01c209b2$bb8b6a60$471045cf@default>
From: "David L. Thompson" <thompson@mindspring.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Status of projects
```

Date: Sat, 1 Jun 2002 17:24:35 -0400

I have four on-going projects.   A S72 portable receiver, a hallicrafters SR-2000, a Geloso pair from 1862, and a KW 2000E.

The problems are the KW 2000E. It has always worked on transmit and KX4R and K4VT got it tuned up to produce 100 watts out with a pair of 6146's. The receiver was not very sensitive so I got KX4R to replace the existing 244 kcs filter as per an article in RSGB's Rad-Com magazine. This was done but no matter what was tried the receiver is still not very sensitive and now the SSB is off with all signals looking like double sideband. G3RZP suggested the sideband crystals might be reversed but it matters little as it receives the same. He also said the filter needs to be adjusted but there is no documentation for this so I have written to the Rad-Com author for details.   G3RZP said with the transmitter part outputting 100 watts that the filter we installed is OK.

The SR-2000 is also a problem as the low voltage cable has intermittents and I am trying to figure out if its in the back of the transceiver or in the cable from the power supply. I did check high voltage and the meter reads 1KV in low and 2KV in high. So at worst the meter shunt might be bad.   A local was going to check it over for me but unfortunately he (at age 58) has been called back to active army duty.

The S72 is working OK and has been re-capped and all but one tube tests out Ok. I don't have either a 1U4 or 1U5 and did not find them at a local hamfest today. I have to get the BFO to work (hopefully the bad tube section which controls the BFO). I got excellent documentation from Al N4IQ but my S72 has been modified to work only on 120VAC and the battery connection has been removed. The extra wire to connect a long wire antenna has been removed too but Sandy W5TVW suggested that I attach a long wire to the whip with a clamp and that appears to work as thankfully the antenna load resistor is there and reading the required 10K.   W2BBK used to take this receiver to VP2 in the early 50's along with an Elmac A-54H or later a Viking I. He worked a couple hundred contacts on 40CW and stations on 20 AM using a long wire.   I notice Dr Evans is still in the latest FCC data base so I will drop him a note to see
if he remembers what he did.   I have used shoe polish and the case looks fairly good. The carrying strap has broken and wonder if anyone has a source for replacements. I want something close and not too modern.

The Geloso twins finally arrived. I found a manual copy inside the back cover and its alreay been re-capped and all the tubes check very good. Two of the knobs were damaged and I got replacements at the hamfest. It has a spinner knob for the tuning knob and that works well. The receiver says G 209 (1959 see the QST review) but the front panel says G 4/214 which was made in 1962. The receiver covers 80 to 10 including 11 meters.   Its hot on all bands and the AM audio sounds great on the quam 8" speaker and wooden case I bought at Southern Radio in New Orleans in 1958. It has separate BFO settings for upper and lower SSB and SSB tunes in quite well. There is a crystal filter selection for selectivity and CW sounds great too. The calibrator is a novel idea. Instead of a 100kcs calibrator you set the receiver to the bottom of each band (the boxes for this line up from 80 to 10). You set it to the mark, turn on the calibrator, and tune the frequency adjustment knob for a calibrator zero beat on say 14.0Mcs. I checked and it stays close across the band once set. On 10 meters there is some wobble in signals on CW and SSB but even there its still hot. You do have to tune carefully to properly tune in signals. I went to the Bama web page to get the G 222 TR transmitter manual (the schematic came from the I2VIU web page). I have not dug into the transmitter but have replaced two kbobs and reset one of the connectors on the back. I do notice that it has the later 4/105 VFO rather than the 4/104 which was sold in the USA by American Geloso. The terminal strip documentation talks about remote control and mute plus allows hooking up an ALC circuit on the transmitter. This transmitter should LOTS of modulation as it has a single 6146 modulated by a pair of 807's. I hope to get this transmitter working on all bands and plan on making the Geloso my main rig for 29 Macs AM. Look at the I0JX web page as he has a great picture of this rig with a D-104 and Tony says he uses it on 10 AM too.

Whew....maybe I have too many projects going! Grin...
73 Dave K4JRB

To: Old Tube Radios <boatanchors@theporch.com>
Cc: boatanchors@theporch.com
Date: Sat, 1 Jun 2002 18:43:09 -0400
Subject: SR-2000 Hallicrafters Hurricane hint
Message-ID: <20020601.184310.2392.5.k4pf@juno.com>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
From: Edward J Knobloch <k4pf@juno.com>

> Dave K4JRV thompson@mindspring.com
> mentioned that his new Halli SR-2000's HV is reading low.

My SR-2000 also had a low-reading HV meter.
I found that Hallicrafters scrimped and didn't use proper high-voltage-rated resistors in the meter multiplier circuit.
Instead, they had two cheepie 2.7 Meg 2 W carbon resistors in series across 3 KV.

The two carbon resistors used had shifted drastically higher in value, causing the panel voltmeter to read low. They should be replaced with wire wound or metal film resistors.

Be careful with the 8122 final tubes. It is easy to kill them by drawing excessive screen current. The Hallicrafters tune-up proceedure, where you adjust the plate tuning and loading controls for the correct peak screen current, (+not+ a plate current dip), should be followed exactly. With care, the tubes will last forever.

Also, if you have several 8122's, you should match them by measuring the value of negative bias required for a given resting current. A handy place to measure the bias is at the wiper of the bias set pot on the front panel. With only one tube installed, measure the bias voltage needed for 125mA in tune mode, no excitation, dummy load attached. Don't just remove the plate lead to disable the second 8122, it will draw excessive screen current. Testing about ten 8122's, I've found that the required grid bias varied from -19.3V to -27.2V to draw 125mA with one tube. The test should be done quickly, because with the second socket empty, most of the cooling air will bypass the tube being tested.

In normal operation, you should get about 400W output in Low power, 800W output in High on 80, 40 and 20, following Hallicrafters tuning method. Lower output on 15 and 10m.

I've used both RCA and Eimac 8122's. I have no experience with Burle 8122's, which are still being manufactured.

73,
Ed Knobloch   k4pf@juno.com

Message-ID: <028801c209be$5e203340$1b5262d8@naxs.com>
From: "Barry L. Ornitz" <ornitz@tricon.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: How do you id PCB's? What to do? [Long]
Date: Sat, 1 Jun 2002 18:47:49 -0400
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Tom, Tarheel6@email.msn.com, asked about the possibility of PCB's in an old military power supply about 55 years old. He noted that one of the capacitors had leaked.

I cannot say for sure about this particular power supply, but polychlorinated biphenyls gained considerable popularity in the late 1930's with large scale production during the Second World War. With its higher dielectric constant than conventional mineral oil, it made for smaller capacitors for a given value of capacitance; thus it was popular in military gear, particularly in aircraft applications where its flame retardancy was a real plus. By the 1950's, it was difficult to find an oil capacitor that did not contain PCB's. So this places the likelihood of the capacitor oil having PCB's very high.

Contrary to much of the misinformation passed around in various Internet radio groups, THERE IS _NO_ SIMPLE TEST THAT THE HAM CAN DO TO DETERMINE IF CAPACITOR OIL CONTAINS PCB'S OR NOT. I am sorry to shout here, but you may read otherwise from other members of this list. I can say with certainty that they are wrong. Speaking as the Old Tube Radios' "resident chemist" you should trust me on this. [Actually I am a PhD chemical/electrical engineer.] I have done considerable research on the subject of PCB's and as Jack would say, I know whereof I speak! (*)

There are rather strict guidelines on the handling and disposal of PCB containing materials. A web search will reveal considerable information here. Look especially at the various Environmental Protection Agency sites. Luckily, the typical capacitor found in a power supply for ham use is not large enough to fall under the action volume. There are some really large oil-filled capacitors that show up on E-Bay occasionally, and at least one Texas ham advertising there was paid a visit by the EPA to insure he that had labeled and stored the units properly, and that his customers would realize the requirements too.

I would suggest you attempt to clean your supply yourself if you are willing to take the proper safety precautions. First get a pair of rubber gloves and safety glasses or goggles. The gloves should be neoprene or preferably the Buna-N nitrile solvent resistant gloves. Latex and vinyl gloves are not suitable. Go to a paint store and buy one or two empty, metal, one gallon paint cans, a gallon of mineral spirits paint thinner, a pint of acetone, and two inexpensive stiff brushes.

Working outdoors, place the power supply in a large polyethylene plastic tub. If this is a military supply with sealed transformers and no electrolytic capacitors, you can begin work. If the transformers have exposed paper insulation, and if you have electrolytic capacitors, you will have to remove them first. Wear the gloves and safety glasses.

Remove the leaking capacitor and place it in one of the metal cans. Using a screwdriver or putty knife, remove as much of the dried or gummy deposit as you can. Place this in the can too. Do not stir up any dust as breathing this could be dangerous.

Once you have removed all the dried or rubbery material that you can, begin washing the chassis with half the paint thinner. Use the stiff brush to scrub the chassis. Collect the liquid and reuse it until you feel you have removed most of the residue from the chassis. Pour the contaminated thinner into the paint can too.

Repeat the process with the second half gallon of paint thinner. Clean your tools at this time too. Pour off the paint thinner and let the chassis remain in the tub until most of the remaining thinner has dried. Discard the brush into one of the paint cans too.

At this point, you need to wash the chassis in the tub with hot water and some detergent like Dawn. Using the second brush, again scrub the chassis thoroughly. This was the reason for removing the transformer; you don't want it soaked in water. Any electrolytics would have been destroyed by the paint thinner earlier. Rinse and repeat. The rinse water will be safe enough to pour out in your yard. I would avoid taking it indoors to pour down the drain, however.

Rinse the chassis and tub very thoroughly with clean water. If you have hard water, mineral containing water, or use a salt regenerated water softener, buy a gallon of distilled water to finish the rinse. Let the unit sit a few minutes to drain and then pour the acetone over it. This will help remove the remaining water. Note that the mineral spirits and acetone may soften or remove some paint and MPF varnish. This cannot be helped.

Let the unit dry several hours in the sun. When you can no longer smell ANY residual solvent, it is safe to take back inside. Remember that the acetone and paint thinner are quite flammable. Any remaining acetone will evaporate quickly outdoors. Before powering the supply up, make sure it has dried for at least a week or more and that any cloth covered insulation is not damp.

I would consider painting or varnishing the chassis with oil-based urethane varnish to seal and protect the chassis. If you want to match the yellow MFP color, break open a High-Lighter pen and place the felt inside in a half-ounce of acetone to extract the dye. This can be added to the varnish.

The tub used to clean the chassis in should never be used for food, ice, or in contact with anything that might be consumed. You might consider cutting it up and discarding it in another paint can if you do not wish to keep it for future cleaning.

The metal paint cans containing the PCB contaminated waste should be sealed and labeled as such. Many communities hold a yearly hazardous waste disposal day. We have about three a year where I live. The normal things they collect are old paint, motor oil, and garden insecticides, but they will take your waste too. Be sure and have it labeled properly, and notify the person in charge of what the cans contain.

Some electric utilities will take contaminated transformer oils for disposal, but they will rarely take materials such as this. It may be worth a few telephone calls to the power company and local sanitation department to be sure.

This procedure is based on the assumption that PCB materials are present. This is the safe approach. In fact, I would approach ANY oil-filled capacitor made from the 1930's through the 1970's as if it contained polychlorinated biphenyls. Between 1929 and 1977, Monsanto (the main manufacturer) produced some 1.4 BILLION pounds of PCB's, so there is a lot of it out there. I have even seen documentation that some wrapped paper capacitors contained high molecular weight PCB's in the paper (solid at room temperature). I doubt if these were common, however, so disposing of wrapped paper capacitors in a regular landfill is probably OK.

For anyone that is interested, I can provide a list of trade names of commercial PCB oils. The generic name for these oils is askarels, but every manufacturer used his own trade name. Some you may have seen are Arochlor (Monsanto), Chlorinol (Sprague), Diachlor (Sangamo), Dykanol (Cornell Dubilier), Hyvol (Aerovox), Inerteen (Westinghouse), and Pyranol (General Electric).

Please be safe, and please make sure your contaminated
waste is disposed of properly.

73, Dr. Barry L. Ornitz   WA4VZQ   ornitz@tricon.net

(*) Most of the foreign trade names of PCB oils found on
the EPA website were provided by me.

From: "Roger A. McCarty" <rmccarty@earthlink.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Roger's death
Date: Sat, 1 Jun 2002 15:51:16 -0700
Message-ID: <002301c209be$d9beedc0$2802a8c0@RAMcCarty>
MIME-Version: 1.0
Content-Type: text/plain;
     charset="Windows-1252"
Content-Transfer-Encoding: 7bit

It is with great sadness that I inform you of the untimely passing of
Roger McCarty KD6CC. We lost him yesterday, May 31 in a traffic
accident.
I will contact you with the details of the funeral at a later date. If
you would like to contact someone, I, his brother Kirk, am available, by
phone 760-949-4369 or at imub4ur@netzero.net.

Kirk McCarty

Outgoing mail is certified Virus Free.
Checked by AVG anti-virus system (http://www.grisoft.com).
Version: 6.0.332 / Virus Database: 186 - Release Date: 3/6/2002

Date: Sat, 01 Jun 2002 15:56:46 -0700
From: Arden Allen <gumbear@pacbell.net>
Subject: Re: How do you id PCB's? What to do?
To: Old Tube Radios <boatanchors@theporch.com>
Cc: Barry Ornitz <ornitz@tricon.net>
Message-id: <0GX100F3UUE79T@mta5.snfc21.pbi.net>
MIME-version: 1.0
Content-type: text/plain; charset=ISO-8859-1
Content-transfer-encoding: 7bit

Hi Ed;

> the main offender are oil filled capacitors dykonol pyronol (spelling)
> etc..... I am not sure about standard can type electrolytics.

I know that aluminum electrolytics contain some ethylene glycol but the amount you will be exposed to is far less than what you can get when changing radiator coolant in your car.

Perhaps Dr. Ornitz will join the discussion with some information on the mentioned materials.

Arden Allen   KB6NAX   Vallejo, CA   gumbear@pacbell.net

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------------------------------
Message-ID: <02a801c209c5$94750720$1b5262d8@naxs.com>
From: "Barry L. Ornitz" <ornitz@tricon.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: How do you id PCB's?  What to do?
Date: Sat, 1 Jun 2002 19:39:26 -0400
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit
```

Since I get the list in Digest form, I have not seen Ed's full reply yet. Arden copied me on this, so I can add just a little.

> > the main offenders are oil filled capacitors dykonol
> > pyronol (spelling) etc..... I am not sure about
> > standard can type electrolytics.

Dykanol and Pyranol are certainly PCB materials.

> I know that aluminum electrolytics contain some ethylene
> glycol but the amount you will be exposed to is far less
> than what you can get when changing radiator coolant in
> your car.

Ordinary aluminum electrolytics are filled with a paste and are not really dry. In fact the paste electrolyte is the cathode to the anodic film that actually forms the capacitor. The second aluminum foil just provides contact to the paste electrolyte. Since the electrolyte must be kept moist to function properly, it often contains materials which absorb moisture from the surrounding humid air. Ethylene and propylene glycol are often used along with glycerin and sorbitol (a sugar). As long as the electrolytic capacitor is stored in a reasonably humid environment, typically 20% relative humidity or higher, the paste will remain moist. In a hot and especially dry environment, the paste will dry out and the capacitor will quit working. This is the failure mechanism for low temperatures too. If the paste freezes, the electrical conductivity of the paste drops dramatically and the capacitance drops in proportion. Fortunately many of the materials such as the glycols act as antifreeze so lower temperature operation is possible. The conductive material in the paste can be any number of inorganic salts but boric acid and sodium borate are still popular.

None of the ingredients in aluminum electrolytic capacitors are terribly toxic or corrosive to the skin. Proper washing with soap and water is all that is necessary if you contact them. Of course, you would not want to eat them.

There is a possible exception, however, with early "wet-slug" tantalum capacitors. These are usually hermetically sealed units, and they contain sulfuric acid. The modern solid tantalum capacitors use manganese dioxide instead of a paste, but even this is slightly moist. About the only place most of us will encounter the sulfuric acid-filled tantalum capacitors is in the audio stage of the R-390 series of receivers. Unless it is leaking, it rarely causes a problem.

Leaking electrolyte from an aluminum electrolytic capacitor will certainly cause a steel chassis to quickly rust. Fortunately soap and water is all that is needed to clean it.

73, Barry WA4VZQ ornitz@tricon.net

Date: Sat, 1 Jun 2002 20:03:20 -0700
Message-ID: <018a01c209e2$0d46d540$5851a3ac@oemcomputer>
From: "Ed Sharpe" <esharpe@uswest.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: How do you id PCB's? What to do?
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

great info thanks much!
ed!
----- Original Message -----
From: "Barry L. Ornitz" <ornitz@tricon.net>
To: "Arden Allen" <gumbear@pacbell.net>; "Old Tube Radios"
<boatanchors@theporch.com>; "Ed Sharpe" <esharpe@uswest.net>
Sent: Saturday, June 01, 2002 4:39 PM
Subject: Re: How do you id PCB's? What to do?

> Since I get the list in Digest form, I have not seen Ed's
> full reply yet. Arden copied me on this, so I can add just
> a little.
>
> > > the main offenders are oil filled capacitors dykonol
> > > pyronol (spelling) etc..... I am not sure about
> > > standard can type electrolytics.
>
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>
> > I know that aluminum electrolytics contain some ethylene
> > glycol but the amount you will be exposed to is far less
> > than what you can get when changing radiator coolant in
> > your car.
>
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> are not really dry. In fact the paste electrolyte is the
> cathode to the anodic film that actually forms the
> capacitor. The second aluminum foil just provides contact
> to the paste electrolyte. Since the electrolyte must be
> kept moist to function properly, it often contains
> materials which absorb moisture from the surrounding humid
> air. Ethylene and propylene glycol are often used along
> with glycerin and sorbitol (a sugar). As long as the
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> environment, typically 20% relative humidity or higher, the
> paste will remain moist. In a hot and especially dry
> environment, the paste will dry out and the capacitor will
> quit working. This is the failure mechanism for low
> temperatures too. If the paste freezes, the electrical
> conductivity of the paste drops dramatically and the
> capacitance drops in proportion. Fortunately many of the
> materials such as the glycols act as antifreeze so lower
> temperature operation is possible. The conductive material
> in the paste can be any number of inorganic salts but boric
> acid and sodium borate are still popular.
>

> None of the ingredients in aluminum electrolytic
> capacitors are terribly toxic or corrosive to the skin.
> Proper washing with soap and water is all that is necessary
> if you contact them. Of course, you would not want to eat
> them.
>
> There is a possible exception, however, with early
> "wet-slug" tantalum capacitors. These are usually
> hermetically sealed units, and they contain sulfuric acid.
> The modern solid tantalum capacitors use manganese
> dioxide instead of a paste, but even this is slightly
> moist. About the only place most of us will encounter the
> sulfuric acid-filled tantalum capacitors is in the audio
> stage of the R-390 series of receivers. Unless it is
> leaking, it rarely causes a problem.
>
> Leaking electrolyte from an aluminum electrolytic capacitor
> will certainly cause a steel chassis to quickly rust.
> Fortunately soap and water is all that is needed to clean
> it.
>
>   73, Barry   WA4VZQ   ornitz@tricon.net
>
>
>

Date: Sat, 1 Jun 2002 22:12:13 -0700
Message-ID: <007c01c209f4$0ed00820$0100a8c0@smeccxp>
From: "ed sharpe" <esharpe@uswest.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: How do you id PCB's? What to do? [Long]
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Dear Barry, I would like permission to post this on our web site for the
museum www.smecc.org

I did a small article for CHRS in northern calif 10 or so years ago warning
folk about this problem but you explanation and remedy is much more elegant
that what I worded up!

thanks ed sharpe archivist for smecc
----- Original Message -----
From: "Barry L. Ornitz" <ornitz@tricon.net>
To: "Old Tube Radios" <boatanchors@theporch.com>

Sent: Saturday, June 01, 2002 3:47 PM
Subject: Re: How do you id PCB's? What to do? [Long]

> Tom, Tarheel6@email.msn.com, asked about the possibility of
> PCB's in an old military power supply about 55 years old.
> He noted that one of the capacitors had leaked.
>
> I cannot say for sure about this particular power supply,
> but polychlorinated biphenyls gained considerable
> popularity in the late 1930's with large scale production
> during the Second World War. With its higher dielectric
> constant than conventional mineral oil, it made for smaller
> capacitors for a given value of capacitance; thus it was
> popular in military gear, particularly in aircraft
> applications where its flame retardancy was a real plus.
> By the 1950's, it was difficult to find an oil capacitor
> that did not contain PCB's. So this places the likelihood
> of the capacitor oil having PCB's very high.
>
> Contrary to much of the misinformation passed around in
> various Internet radio groups, THERE IS _NO_ SIMPLE TEST
> THAT THE HAM CAN DO TO DETERMINE IF CAPACITOR OIL CONTAINS
> PCB'S OR NOT.   I am sorry to shout here, but you may read
> otherwise from other members of this list. I can say with
> certainty that they are wrong. Speaking as the Old Tube
> Radios' "resident chemist" you should trust me on this.
> [Actually I am a PhD chemical/electrical engineer.] I have
> done considerable research on the subject of PCB's and as
> Jack would say, I know whereof I speak!   (*)
>
> There are rather strict guidelines on the handling and
> disposal of PCB containing materials. A web search will
> reveal considerable information here. Look especially at
> the various Environmental Protection Agency sites.
> Luckily, the typical capacitor found in a power supply for
> ham use is not large enough to fall under the action
> volume. There are some really large oil-filled capacitors
> that show up on E-Bay occasionally, and at least one Texas
> ham advertising there was paid a visit by the EPA to insure
> he that had labeled and stored the units properly, and that
> his customers would realize the requirements too.
>
> I would suggest you attempt to clean your supply yourself
> if you are willing to take the proper safety precautions.
> First get a pair of rubber gloves and safety glasses or
> goggles. The gloves should be neoprene or preferably the
> Buna-N nitrile solvent resistant gloves. Latex and vinyl

> gloves are not suitable. Go to a paint store and buy one or two empty, metal, one gallon paint cans, a gallon of mineral spirits paint thinner, a pint of acetone, and two inexpensive stiff brushes.
>
> Working outdoors, place the power supply in a large polyethylene plastic tub. If this is a military supply with sealed transformers and no electrolytic capacitors, you can begin work. If the transformers have exposed paper insulation, and if you have electrolytic capacitors, you will have to remove them first. Wear the gloves and safety glasses.
>
> Remove the leaking capacitor and place it in one of the metal cans. Using a screwdriver or putty knife, remove as much of the dried or gummy deposit as you can. Place this in the can too. Do not stir up any dust as breathing this could be dangerous.
>
> Once you have removed all the dried or rubbery material that you can, begin washing the chassis with half the paint thinner. Use the stiff brush to scrub the chassis. Collect the liquid and reuse it until you feel you have removed most of the residue from the chassis. Pour the contaminated thinner into the paint can too.
>
> Repeat the process with the second half gallon of paint thinner. Clean your tools at this time too. Pour off the paint thinner and let the chassis remain in the tub until most of the remaining thinner has dried. Discard the brush into one of the paint cans too.
>
> At this point, you need to wash the chassis in the tub with hot water and some detergent like Dawn. Using the second brush, again scrub the chassis thoroughly. This was the reason for removing the transformer; you don't want it soaked in water. Any electrolytics would have been destroyed by the paint thinner earlier. Rinse and repeat. The rinse water will be safe enough to pour out in your yard. I would avoid taking it indoors to pour down the drain, however.
>
> Rinse the chassis and tub very thoroughly with clean water. If you have hard water, mineral containing water, or use a salt regenerated water softener, buy a gallon of distilled water to finish the rinse. Let the unit sit a few minutes to drain and then pour the acetone over it. This will help remove the remaining water. Note that the

> mineral spirits and acetone may soften or remove some paint
> and MPF varnish. This cannot be helped.
>
> Let the unit dry several hours in the sun. When you can no
> longer smell ANY residual solvent, it is safe to take back
> inside. Remember that the acetone and paint thinner are
> quite flammable. Any remaining acetone will evaporate
> quickly outdoors. Before powering the supply up, make sure
> it has dried for at least a week or more and that any cloth
> covered insulation is not damp.
>
> I would consider painting or varnishing the chassis with
> oil-based urethane varnish to seal and protect the
> chassis. If you want to match the yellow MFP color, break
> open a High-Lighter pen and place the felt inside in a
> half-ounce of acetone to extract the dye. This can be
> added to the varnish.
>
> The tub used to clean the chassis in should never be used
> for food, ice, or in contact with anything that might be
> consumed. You might consider cutting it up and discarding
> it in another paint can if you do not wish to keep it for
> future cleaning.
>
> The metal paint cans containing the PCB contaminated waste
> should be sealed and labeled as such. Many communities
> hold a yearly hazardous waste disposal day. We have about
> three a year where I live. The normal things they collect
> are old paint, motor oil, and garden insecticides, but they
> will take your waste too. Be sure and have it labeled
> properly, and notify the person in charge of what the cans
> contain.
>
> Some electric utilities will take contaminated transformer
> oils for disposal, but they will rarely take materials such
> as this. It may be worth a few telephone calls to the
> power company and local sanitation department to be sure.
>
> This procedure is based on the assumption that PCB
> materials are present. This is the safe approach. In
> fact, I would approach ANY oil-filled capacitor made from
> the 1930's through the 1970's as if it contained
> polychlorinated biphenyls. Between 1929 and 1977, Monsanto
> (the main manufacturer) produced some 1.4 BILLION pounds of
> PCB's, so there is a lot of it out there. I have even seen
> documentation that some wrapped paper capacitors contained
> high molecular weight PCB's in the paper (solid at room
> temperature). I doubt if these were common, however, so

> disposing of wrapped paper capacitors in a regular landfill
> is probably OK.
>
> For anyone that is interested, I can provide a list of
> trade names of commercial PCB oils. The generic name for
> these oils is askarels, but every manufacturer used his own
> trade name. Some you may have seen are Arochlor
> (Monsanto), Chlorinol (Sprague), Diachlor (Sangamo),
> Dykanol (Cornell Dubilier), Hyvol (Aerovox), Inerteen
> (Westinghouse), and Pyranol (General Electric).
>
> Please be safe, and please make sure your contaminated
> waste is disposed of properly.
>
>   73, Dr. Barry L. Ornitz   WA4VZQ   ornitz@tricon.net
>
>
> (*) Most of the foreign trade names of PCB oils found on
> the EPA website were provided by me.
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End of BOATANCHORS Digest 3341
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